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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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7590	12/10/2004		EXAMINER	
CHRISTOPHER F. REGAN ALLEN, DYER, DOPPLET, MILBRATH & GILCHRIST, PA P.O. BOX 3791 ORLANDO, FL 32802-3791			PERILLA, JASON M	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/529,429	BAHLENBERG ET AL.
	Examiner	Art Unit
	Jason M Perilla	2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 20 July 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 27-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 27-54 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 22 March 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## DETAILED ACTION

1. Claims 27-54 are pending in the instant application.

### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the grouping of longer and shorter lines ***with respect to the system parameter length "X"*** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Although the proposed drawing correction submitted March 22, 2004 was previously accepted by the Examiner in the office action of April 20, 2004, upon further consideration, the claimed subject matter is not appropriately shown in the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Response to Argument***

3. Applicant's arguments with respect to prior art rejections of the claims have been considered but are moot in view of the withdrawal of the rejections by the Examiner. The Examiner notes that the withdrawal of the previously set forth prior art rejections is made because the prior art rejections previously set forth fail to address the limitations of the claims including the use of FDD at *lower frequencies* and the use of OFDD at *higher frequencies*. However, upon further consideration, a new ground(s) of rejection is made in view of Bingham et al (US 5838667).

***Claim Objections***

4. Claims 28-32, 37, 38, 40-42, 44-48 and 50 are objected to because of the following informalities:

Regarding claim 28, the limitation including an extra cyclic prefix (line 2) is objected to because it is nearly indefinite. A cyclic prefix used for OFDD transmissions is not previously defined, and the use of the word "extra" in the limitation implies a cyclic prefix is defined in a previous claim.

Regarding claim 29, in line 2, "the cyclic prefix" is lacking an antecedent basis because "an extra cyclic prefix" is defined in claim 28 rather than simply "a cyclic prefix". Further, "dimensioned for a shorter line" in line 3 should be replaced by -dimensioned for the shorter lines--.

Regarding claim 31, in lines 5-6, “all transmitters in ONUs and NTs in the system” should be replaced by –all transmitters in the ONUs and the NTs in the system--.

Regarding claim 32, in line 2, “timing advance” should be replaced by –a timing advance--.

Regarding claim 37, in line 2, “the frequency band” is lacking antecedent basis. No basis is made for a “band” of frequencies to be utilized.

Regarding claim 38, in line 2, “FDD band frequencies” is lacking antecedent basis. No basis is made for a “band” of frequencies to be utilized.

Regarding claim 40, the limitation including an extra cyclic prefix (line 2) is objected to because it is nearly indefinite. A cyclic prefix used for OFDD transmissions is not previously defined, and the use of the word “extra” in the limitation implies a cyclic prefix is defined in a previous claim. Further regarding claim 40, in line 3, “for second duplex” should be replaced by –the second duplex—and “over shorter lines” should be replaced by –over the shorter lines--, in line 4, “a first duplex format” should be replaced by –the first duplex format--, and in line 5, “for longer lines” should be replaced by –over the longer lines--.

Regarding claim 41, in line 3, “dimensioned for a shorter line” should be replaced by –dimensioned for the shorter lines--.

Regarding claim 44, the limitation including an extra cyclic prefix (line 2) is objected to because it is nearly indefinite. A cyclic prefix used for OFDD transmissions is not previously defined, and the use of the word “extra” in the limitation implies a cyclic

prefix is defined in a previous claim. Further regarding claim 44, in line 4, "over longer lines" should be replaced by --over the longer lines--.

Regarding claim 45, in lines 2-3, "dimensioning the extra cyclic prefix for a shorter line" should be replaced by --dimensioning the extra cyclic prefix for the shorter lines--.

Regarding claim 47, in lines 5-6, "all transmitters in ONUs and NTs in the system" should be replaced by --all transmitters in the ONUs and the NTs in the system--.

Regarding claim 48, in line 2, "calculating timing advance" should be replaced by --calculating a timing advance--.

Regarding claim 50, in line 2, "boosting FDD band transmissions" should be replaced by --boosting the FDD band transmissions--.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 36 and 52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 36, the claim is not enabled to one having ordinary skill in the art because one having ordinary skill in the art is unable to concurrently utilize both ADSL and VDSL on a *single subscriber line* having a connection to a *single modem* as claimed. The use of both ADSL and VDSL used ***separately and concurrently*** as claimed is not enabled because, as understood by one having skill in the art, the two techniques for supplying digital subscriber line services overlap in their technique of application such that the use of one would impede the use of the other. If a hybrid technique of both ADSL and VDSL is used on a single subscriber line, the specification should enable the technique such that one skilled in the art could make and use the claimed invention. Evidence of the fact that ADSL and VDSL are understood in the art to be separate methods for providing subscriber service is made by Bingham et al (US 5838667). Bingham discloses that the standard for ADSL is provided by The Alliance For Telecommunications Information Solutions (ATIS) (col. 1, lines 15-33). Further, Bingham discloses that ATIS defines a separate standard for VDSL (col. 1, line 65 – col. 2, line 8). ATIS provides industry standards which define terms in the art such as ADSL and VDSL. Clearly, ADSL and VDSL were not intended to be utilized upon a single subscriber line simultaneously as claimed. Additionally, the claimed use of ADSL and VDSL on a single subscriber line is not described in the written description or drawings of the specification ***in any detail*** such that it could be made or used by anyone in the art. ***Because the use of ADSL and VDSL, as plainly claimed and understood in the art, separately and concurrently on the same subscriber line would not be expected to actually perform together reliably and effectively to provide utility***

**without additional teaching from the instant application of how the combination of the two would overcome the obvious limitation that they are not designed to perform at the same time on a single line, the claim is not enabled by the specification.**

Regarding claim 52, the claim is not enabled for the same reasons as applied to claim 36 above.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 27-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 27, in lines 15-18, the limitations including using FDD at lower frequencies and using OFDD at higher frequencies is unclear and indefinite because the terms lower and higher have no reference. Because the terms "lower" and "higher" must be used to describe something in reference to something else for a definite interpretation to be made, these limitations are indefinite for not having any particular reference to be lower or higher than. (See specification page 8, lines 10-15.)

Regarding claim 34, the claim is indefinite because a clear application of the power boost can not be definitively made. One skilled in the art is unable to determine a definite interpretation of a proper application of the power boost as claimed. The application of a power boost to "FDD band transmission" could be understood to be a power boost to only the signals transmitted by FDD because it is the FDD band

transmission (*singular*) which is boosted. Otherwise, the application of the power boost may be made to both the frequencies or bandwidths (bands) of the FDD and OFDD transmissions wherein they may overlap frequencies used in the FDD bandwidth.

Regarding claim 37, the claim is indefinite because the language of the claim including “the frequency band used for FDD is the same as that used for ADSL” (lines 2-3) leads one skilled in the art to more than one interpretation of the claimed invention. As claimed, it is unclear if the frequency band used for FDD is the one used for ADSL or if the ADSL subscriber protocol and the FDD modulation technique are exclusive of each other.

Regarding claim 38, the claim is indefinite because a definite interpretation of the claim can not be made. The claim is indefinite for several reasons. In line 2, the phrase “wherein FDD band frequencies” leads one to multiple interpretations of the claim. It is unclear if “FDD band frequencies” are “[the] FDD band frequencies” of claim 27 or FDD band frequencies generally. Further, in line 3, “as used for ADSL” leads one to multiple interpretations of the claim. For instance, one possible interpretation is that the FDD band frequencies are used for the ADSL subscriber service and another possible interpretation is that the FDD band frequencies are used exclusively of the ADSL subscriber service.

Claim 39 is indefinite for the same reasons as applied to claim 27 above.

Claim 43 is indefinite for the same reasons as applied to claim 27 above.

Claim 53 is indefinite for the same reasons as applied to claim 37 above.

Claim 54 is indefinite for the same reasons as applied to claim 38 above.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 27, 33, 35, 37-39, 43, 49, 51, 53, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bingham et al (5838667; hereafter "Bingham") in view of Eames (US 6282189).

Regarding claim 27, Bingham discloses a telecommunications system (fig. 1(a); abstract) comprising: a central station (fig. 1(a), ref. 201; col. 4, lines 42-46); subscriber lines of different lengths or lengths which vary by a fair amount (fig. 1(a); col. 4, lines 42-46; col. 5, lines 14-16), and plurality of data modems (fig. 1(a), refs. R<sub>1</sub>-R<sub>N</sub>) connected to the central station by the subscriber lines of different lengths with duplex data being transmitted between the central station and at least one data modem using very high rate digital subscriber line (VDSL) (col. 5, lines 16-25; col. 1, line 66 – col. 2, line 8). Bingham does not explicitly disclose (a) the subscriber lines being grouped into longer and shorter lines, shorter lines are defined as lines having a length less than X, and longer lines are defined as lines having a length equal to or greater than X where X is a system parameter determined for a given telecommunications system; or (b) frequency divided duplex (FDD) is used at lower frequencies for transmissions over the longer lines and orthogonal frequency divided duplex (OFDD) is used at higher frequencies for transmissions over the shorter lines. However, Bingham, as well as additional

references of analogous prior art, contain teachings which would lead one having ordinary skill in the art to arrive at the claimed limitations (a) and (b) above.

Regarding limitation (a) Bingham teaches not only that the various subscriber lines vary in length, but also that the possible data rates that the various lengths of subscriber lines are capable of carrying does vary according the length of the lines. Bingham teaches that VDSL, in contrast to ADSL, is capable of achieving higher data rates although the transmissions must be implemented on shorter lines (col. 1, lines 24-33; col. 1, line 65 – col. 2, line 8). Therefore, Bingham provides teachings that VDSL is better suited for subscriber lines of shorter length. Further, Bingham teaches that VDSL is capable of transmitting over line lengths of up to 3000 ft or 5000 ft (col. 5, lines 15-25). While Bingham discloses both ADSL and VDSL, Eames *specifically* teaches that VDSL and ADSL differ in the length of the subscriber line which they are applied (col. 9, lines 11-19). Eames teaches analogous digital subscriber line systems and methods and that VDSL should only be applied over distances not to exceed 3000 ft whereas ADSL may be capable of providing service to subscribers at line distances of up to 9000-12000 ft. Therefore, in the case of line lengths which vary over a wide range (Bingham; col. 5, lines 14-16) such as 1000 ft to 9000 ft, the teachings of Bingham and Eames are such that the lines would be grouped into lines of length for VDSL (approx. 5000 ft. or less) and lines of length for ADSL (approx 5000 ft. or more; i.e. "X" = 5000 ft.). Although the exact distinction "X" separating the lines of longer length from those of shorter length may be a variable matter of design choice, the motivation is such that the lines would be appropriately divided for use with either VDSL or ADSL (i.e. "X" = VDSL).

vs. ADSL). Hence, a distinction "X" must be made between the line lengths to provide subscriber service to a group of customers having line lengths that may vary between 1000 ft and 9000 ft so that the highest possible data rate transmissions may be provided to those customers with the shorter line lengths and the customers with longer line lengths may still receive service at a lower data rate. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to separate the subscriber lines into lines longer than X and lines shorter than X as collectively taught by Bingham in view of Eames because lines of shorter length are capable of the highest data rate transmissions of VDSL transmission and lines of longer length are still capable of ADSL transmission speeds at a lower data rate.

Regarding limitation (b) Bingham teaches that ADSL uses frequency divided duplex or FDD (col. 1, lines 60-65) and that VDSL uses the combination FDD discrete multi-tone (col. 2, lines 15-23) or OFDD. It is well known in the art that DMT is the equivalent to OFDD as noted in the specification (pg. 8, lines 19-20). Further, Bingham teaches that VDSL is generally utilized in lines with shorter lengths (col. 2, lines 5-8) and that longer line lengths attenuate higher frequency signals (col. 2, lines 32-38). Thereby, Bingham teaches that VDSL using OFDD is likely to be used over the shorter lines (as applied to limitation (a) above) and that the longer lines (ADSL using FDD as applied to limitation (a) above) are likely to use lower frequencies. Further, Bingham discloses that VDSL may occupy frequencies as high as 51.92 Mhz at the largest possible data rate or lower frequencies for progressively lesser data rates (col. 5, lines 15-25). It is also disclosed by Bingham that typical ADSL may use a bandwidth of

approximately 1.1 Mhz (col. 1, lines 24-33). Therefore, with such combined teachings of Bingham that longer lines attenuate higher frequencies and VDSL uses higher frequencies than ADSL, it is obvious that the higher frequencies and data rates of VDSL should be applied to the shorter lines, and it is further obvious that the lower frequencies and data rates of ADSL should be applied to the longer lines because the characteristics of a subscriber loop system having lines of varying length require the use of lower frequencies at longer line length and higher frequencies at shorter line length to maximize the overall throughput and reliability of the system.

Regarding claim 33, Bingham in view of Eames discloses the limitations of claim 27 as applied above. Further, Bingham discloses that in both ADSL and VDSL different sub-carriers are used in both the up-stream and down-stream transmission directions (col. 1, lines 25-55; col. 2, lines 15-25).

Regarding claim 35, Bingham in view of Eames discloses the limitations of claim 27 as applied above. Further, Bingham discloses that both ADSL and VDSL are used because ADSL is used over the longer lines and VDSL is used over the shorter lines.

Regarding claim 37, Bingham in view of Eames discloses the limitations of claim 35 as applied above. Further, Bingham discloses that FDD is used for ADSL (col. 1, lines 60-65).

Regarding claim 38, Bingham in view of Eames discloses the limitations of claim 35 as applied above. Further, Bingham discloses that FDD is used for ADSL (col. 1, lines 60-65). Therefore, the FDD band frequencies are "power boosted" to the same

level as the ADSL frequencies because FDD band frequencies are ADSL band frequencies as applied to claim 27 above and as broadly as claimed.

Regarding claims 39 and 43, the limitations of the claims are disclosed by Bingham in view of Eames as applied to claim 27 above.

Regarding claim 49, the limitations of the claim are disclosed by Bingham in view of Eames as applied to claim 33 above.

Regarding claim 51, the limitations of the claim are disclosed by Bingham in view of Eames as applied to claim 35 above.

Regarding claim 53, the limitations of the claim are disclosed by Bingham in view of Eames as applied to claim 37 above.

Regarding claim 54, the limitations of the claim are disclosed by Bingham in view of Eames as applied to claim 38 above.

11. Claims 28-32, 40-42, and 44-48 rejected under 35 U.S.C. 103(a) as being unpatentable over Bingham in view of Eames, and in further view of Younce et al (US 5521908; hereafter Younce).

Regarding claim 28, Bingham in view of Eames disclose the limitations of claim 1 as applied above. Bingham in view of Eames do not specifically disclose that (a) an extra cyclic prefix is used for the OFDD or VDSL transmissions over the shorter lines or (b) that frequencies above an FDD or ADSL band are not used for longer lines.

However, regarding limitation (b), it is obvious, as applied to claim 1 above, that any frequencies above the FDD band used for ADSL over the longer lines would not be used because longer lines attenuate higher frequencies. Further, regarding limitation

(b), although Bingham in view of Eames do not specifically disclose the limitation, Younce teaches that DMT or OFDD uses a cyclic prefix which is determined according to the length of the impulse response of the channel or subscriber line (col. 1, lines 14-38) to eliminate intersymbol interference. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to apply an extra cyclic prefix to the OFDD transmissions over the shorter lines as taught by Younce because they could advantageously be utilized to remove any intersymbol interference.

Regarding claim 29, Bingham in view of Eames, and in further view of Younce disclose the limitations of claim 28 as applied above. Further, as applied to claim 28 above, the cyclic prefix is dimensioned for the shorter line or channel used for VDSL (Younce; col. 1, lines 15-38) because a cyclic prefix is used for DMT or OFDD and the OFDD transmission method is used to provide VDSL over the shorter lines.

Regarding claim 30, Bingham in view of Eames, and in further view of Younce disclose the limitations of claim 29 as applied above. Further, Younce teaches that the cyclic prefix should be dimensioned for a line of length X. This is the case because Younce teaches that the prefix used with OFDD is dimensioned for the length of the channel (the shorter line using OFDD VDSL up to the length of X) exactly to overcome the intersymbol interference without unduly adding overhead to the transmission and thereby reducing the efficiency of the transmitter (col. 1, lines 28-38).

Regarding claim 31, Bingham in view of Eames, and in further view of Younce disclose the limitations of claim 28 as applied above. Further, Bingham discloses in the telecommunications system (figs. 1(a) and 1(b)) the central station (fig. 1(b) ref. 202)

is an optical network unit (ONU) (col. 4, line 62 – col. 5, line 5) and, as broadly as claimed, the remote units R<sub>1</sub>-R<sub>N</sub> are network terminations. It is inherent that each of the ONU's and NT's comprise at least one transmitter because full duplex or two way communication is provided between them via VDSL or ADSL subscriber service over the subscriber lines. Further, Bingham discloses that, to reduce cross talk interference, time synchronization is performed between the ONU's and the NT's (col. 2, lines 48-63; col. 7, lines 17-26).

Regarding claim 32, Bingham in view of Eames, and in further view of Younce disclose the limitations of claim 28 as applied above. Further, Bingham discloses that timing advance or, as broadly as claimed, timing synchronization is calculated for each subscriber based upon the subscriber line length (col. 2, lines 48-63; col. 7, lines 17-26). Bingham discloses that for each of the subscriber lines (fig. 6; ref. 206 and above), the timing advance or timing synchronization is calculated or found (col. 7, lines 25-50). In the system of Bingham in view of Eames, and in further view of Younce, it is inherent that the timing synchronization of the full duplex communications between the data modems and the central station would, at least in part, be attributed to the various lengths of the subscriber lines used. Therefore, it is found that timing advance is calculated for each of the subscriber lines based upon, at least in part, the length of the lines.

Regarding claims 40 and 44, the limitations of the claims are disclosed by Bingham in view of Eames, and in further view of Younce as applied to claim 28 above.

Regarding claims 41 and 45, the limitations of the claims are disclosed by Bingham in view of Eames, and in further view of Younce as applied to claim 29 above.

Regarding claims 42 and 46, the limitations of the claims are disclosed by Bingham in view of Eames, and in further view of Younce as applied to claim 30 above.

Regarding claim 47, the limitations of the claim are disclosed by Bingham in view of Eames, and in further view of Younce as applied to claim 31 above.

Regarding claim 48, the limitations of the claim are disclosed by Bingham in view of Eames, and in further view of Younce as applied to claim 32 above.

12. Claims 34 and 50 rejected under 35 U.S.C. 103(a) as being unpatentable over Bingham in view of Eames, and in further view of Dichter (US 5896443).

Regarding claim 34, Bingham in view of Eames disclose the limitations of claim 27 as applied above. Bingham in view of Eames do not specifically disclose that a power boost is applied to FDD band frequencies used for ADSL. However, Dichter teaches that in a system using ADSL, it may be required to supply a large amount of power to the ADSL transmissions because ADSL transmissions over long line lengths must be powerful enough to overcome parasitic losses due to the long line length (col. 1, lines 63-68). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to apply a power boost to FDD band frequencies as taught by Dichter in the system of Bingham in view of Eames because the FDD band frequencies used to provide ADSL services over longer transmission lines may require a power boost to overcome parasitic losses due to long line lengths.

Regarding claim 50, Bingham in view of Eames, and in further view of Dichter discloses the limitations of the claim as applied to claim 34 above.

***Allowable Subject Matter***

13. No claims are allowed.

***Conclusion***

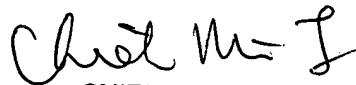
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jason M Perilla  
December 5, 2004

jmp

  
CHIEH M. FAN  
PRIMARY EXAMINER